REMARKS/ARGUMENTS

I. Status of Claims

Claims 1-20 pending of which claims 1, 6, 11 and 15-19 are independent. . Claims 15 and 18 have been canceled.

Applicants note with appreciation that claims 1-14 and 17 are allowed

II. Drawings

In the Office Action, the Examiner did not indicate whether previously filed drawings had been accepted. Accordingly, the Examiner is kindly requested to confirm the acceptance of the drawings.

III. Rejections under 35 U.S.C. §102(e)

Claims 15 and 18 are rejected under 35 U.S.C. § 102 (e) as being anticipated by U.S. Patent No. 6,678,249 to Toskala et al., (hereinafter Toskala). Claim 16 is rejected under 35 U.S.C. §102 (e) as being anticipated by U.S. Publication No. 004/0116143 to Love et al. (hereinafter Love). Claims 15 and 18 have been canceled by this amendment. Applicants respectfully traverse the rejection of claim 16.

Before discussing the differences between the cited references and the present application, it is believed to be beneficial to first give a brief overview of Applicants' disclosure. In a soft handover region for a User Equipment (UE) in an asynchronous CDMA mobile communication system, data from the UE reaches a plurality of active Node Bs covering the soft handover region via uplinks. Each of a plurality of Node Bs demodulates uplink packet data received from the UE and selects ACK/NACK indicating normal/defective packet reception. However, as the Node Bs transmit different ACK/NACK for packet data #1 to the UE, the reliability of the ACK/NACK information is not ensured to the UE. As a result, the decision to retransmit packet data #1, as an integral part of a Hybrid Automatic Retransmission reQuest (HARQ) for an enhanced uplink dedicated transport channel (EUDCH) must be tailored from the usual HARQ scheme for HSDPA (high speed downlink packet access), in order to increase ARQ (automatic retransmission request) efficiency.

The subject matter disclosed in the present application is designed to tailor the usual HARQ scheme particularly for EUDCH in a soft handover region. Specifically, a two response fields approach, as opposed to the conventional one response field approach, is employed to formulate a decision to retransmit packet data. To be more specific, conventionally, only ACK/NACK responses from the Node Bs, which form the one response fields, are used to formulate a decision to retransmit packet data. The inventive HARQ retransmission scheme (hereinafter "the tailored scheme") disclosed in the present application, however, uses the two response fields, which comprise the first response fields indicating whether the Node Bs have received good packet data, and the second response fields indicating whether an RNC connected to the Node Bs has received good packet data, to decide whether to retransmit packet data. As disclosed in the present application, the second response fields, which are decided by the RNC, is usually more reliable than the first response fields, since the RNC is disclosed to use space-diversity-combining to the combine the uplink data received from the Node Bs.

The advantage of the tailored scheme can be shown by example. In one extreme embodiment, all Node Bs returns first response fields indicating NACK, which would have resulted in a retransmission by the UE under the conventional HARQ retransmission scheme. However, under the tailored scheme disclosed in the present application, retransmission may be avoided. This is because the RNC can potentially use space-diversity-combining to the combine the "bad" uplink data received from the Node Bs and end up having the "good" data, and thus produce second response fields indicating ACK.

Claims 16

Claim 16 addresses how an RNC responds to uplink packet data received from the UE as part of the tailored scheme disclosed in the present application. Specifically, claim 16 recites a method of transmitting a response field indicating normal or erroneous reception of uplink packet data transmitted from a user equipment (UE) in a handover region in a radio network controller (RNC) connected to Node Bs that

commonly cover the UE in a mobile communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service, the RNC transmitting the response field. The method comprises the steps of:

> receiving the uplink packet data from the Node Bs, determining whether good uplink packet data is among the received packet data, and checking for errors after combining the received packet data if there is no good uplink packet data;
>
> deciding the value of the response field according to the error check result and transmitting the response field to the Node Bs; and
>
> transmitting the uplink packet data to a higher-layer network after correcting the errors of the uplink packet data.

Love, the cited reference, however, fails to disclose, teach, or suggest the claimed subject matter. Although Love is also related to uplink transmission from a mobile station to a base station during a soft handoff, Love is primarily directed to a scheme for fast scheduling uplink transmissions of a plurality of mobile stations through transmitting to a selected mobile station by a base station the uplink channel scheduling assignment including a transmission assignment, maximum power margin target, maximum power level target and etc. See abstract, paragraph [0041] and claim 1 of Love. The scheme disclosed in Love has little relevance to the HARQ retransmission scheme disclosed in the present application, for Love's scheme is not concerned with retransmission decisions at all. Consequently, Love does not disclose, teach, or suggest the subject matter recited in claim 16.

Nonetheless, the Examiner points to paragraphs [0012] as disclosing the claimed step of receiving the uplink packet data from the Node Bs, determining whether good uplink packet data is among the received packet data, and checking for errors after combining the received packet data if there is no good uplink packet data. Applicants respectfully disagree with the Examiner's understanding. Paragraphs [0012] merely discloses that an RNC receives the demodulated and decoded radio

frames with related frame quality information from each BTS (Node B) in the active set and **selects** a best frame based on frame quality information. Claim 16, however, recites checking for errors after **combining** the received packet data if there is no good uplink packet data. In essence, while Love discloses an RNC **selecting** a best frame, claim 16 claims an RNC **combining** the received packet data if there is no good link packet data. Because **selecting** a best frame is entirely different from **combining** received packet data, Love does not disclose, teach, or suggest the claimed step of receiving the uplink packet data from the Node Bs, determining whether good uplink packet data is among the received packet data, and checking for errors after combining the received packet data if there is no good uplink packet data.

Further, the Examiner relies on paragraph [0012] as disclosing deciding the value of the response field according to the error check result and transmitting the response field to the Node Bs. Specifically, the Examiner equates "control channel information", as disclosed in Love, to the "response field" as recited in claim 16. Applicants respectfully disagree with the Examiner's assessment. As clearly clarified in Love in the same paragraph [0012], "control channel information" is information used by a mobile station to determine what transmission rate to use. The "response field" referenced in claim 16, in contrast, is referred to a response field for indicating normal or erroneous reception of uplink packet data transmitted from a UE, which is recited in the preamble of claim 16, and must be given meaning into claim 16 since the term "the response field" is referred back in claim 16. *Bell Communication s Research Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 620, 634 USPQ2d 1816, 1820 (Fed. Cir. 1995) (held that where the claim body expressly refers back to the preamble, it will be a limitation).

Hence, contrary to what the Examiner's understanding, "control channel information", as disclosed in Love, is different from the response field referred to in claim 16. Accordingly, Love does not disclose, teach, or suggest the claimed step of deciding the value of the response field according to the error check result and transmitting the response field to the Node Bs.

Accordingly, since Love, which has little application to the subject matter that the present application concerns, does not disclose, teach, or suggest each and every limitations of claim 16, particularly the steps of receiving the uplink packet data from the Node Bs, determining whether good uplink packet data is among the received packet data, and checking for errors after combining the received packet data if there is no good uplink packet data and deciding the value of the response field according to the error check result and transmitting the response field to the Node Bs, Love does not anticipate the subject matter recited in claim 16 under 35 U.S.C. 102. Accordingly, the rejection of claim 16 therefore should be withdrawn.

IV. Rejections under 35 U.S.C. §103 (a)

Claims 19 and 20 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Love in view of Toskala. We propose to traverse the rejection with the reasoning stated below.

Apparatus claim 19, as amended, relates to a transmitting apparatus in an RNC capable of responding to uplink packet data received from the UE in accordance with the tailored scheme disclosed in the present application. Specifically, claim 19 recites a transmitting apparatus for transmitting a response field indicating normal or erroneous reception of uplink packet data transmitted from a user equipment (UE) in a handover region in a radio network controller (RNC) connected to active Node Bs that commonly cover the UE in the handover region, the UE retransmitting the uplink packet data according to the value of the response field, in a mobile communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service. The transmitting apparatus comprises:

> a Node B response field detector for detecting response fields indicating normal or erroneous reception of the uplink packet data in the Node Bs;

> a combiner for combining the uplink packet data received from the Node Bs and checking errors in the combined uplink packet data; and
>
> an error detector for checking errors in the uplink packet data, generating the response field according to the error check result, and outputting the generated response field for transmitting to the Node Bs.

As discussed above in connection with claim 16, Love has little relevance to the HARQ retransmission scheme disclosed in the present application. In particular, Love only discloses an RNC that **selects** a best frame based on frame quality information among received frames, rather than **combines** the received packet data if there is no good link packet data. Accordingly, Love also does not disclose, teach, or suggest an RNC having a combiner for combining the uplink packet data received from the Node Bs and checking errors in the combined uplink packet data, as claimed.

Toskala, however, **teaches away from** having an RNC involved in a HARQ retransmission scheme, citing that not having RNC involvement can result in a short round trip delay with respect to deciding whether to retransmit. See col. 8, lines 53-55. Accordingly, Toskala does not disclose, teach, or suggest an RNC having a combiner for combining the uplink packet data received from the Node Bs and checking errors in the combined uplink packet data, as claimed.

The Examiner's contention that Toskala discloses a combining means 425 within a base station (Node B) is largely irrelevant to the combiner as recited in claim 19. This is because claim 19 recites a combiner for combining **the uplink packet data received from the Node Bs** and checking errors in the combined uplink packet data, whereas the combining means 425 disclosed in Toskala, as resided in a Node B, is for combining **the uplink packet data received from UE(s) (mobile stations)**.

Furthermore, the Examiner's assertion that "it would be obvious to a person of ordinary skill in the art at the time of invention to recognize that functionalities of combining the uplink packet data and checking errors in the uplink packet can also be

implemented in a centrally located RNC as disclosed in Love" (emphasis added) is without merit.

As discussed above, Love does not disclose RNC **combining** the received packet data. Rather, Love only discloses RNC **selecting** a best frame based on frame quality information among received frames. Hence, the Examiner's characterization with respect to "functionalities of combining the uplink packet data and checking errors in the uplink packet can also be implemented in a centrally located RNC as disclosed in Love" (emphasis added) is without any factual support. In addition, as discussed above, Toskala **teaches away from** having an RNC involved in a HARQ retransmission scheme, citing that not having RNC involvement can result in a short round trip delay with respect to deciding whether to retransmit. See col. 8, lines 53-55. Consequently, contrary to the Examiner's assertion, even combining Love with Toskala, a person of ordinary skill in the art still will not arrive at a combiner for combining the uplink packet data received from the Node Bs and checking errors in the combined uplink packet data, as claimed.

Accordingly, Love and Toskala, either singly or in combination, does not disclose, teach, or suggest a combiner for combining the uplink packet data received from the Node Bs and checking errors in the combined uplink packet data, as recited in claim 19.

Further, for the very reasons discussed above in connection with the combiner as claimed, neither Love nor Toskala has any relevance to generating a response field from error-checking the combined uplink packet data received from the Node Bs, and to transmitting the generated response field to the Node Bs. Accordingly, Love and Toskala, either singly or in combination, does not disclose, teach, or suggest an error detector for checking errors in the uplink packet data, **generating the response field** according to the error check result, and **outputting the generated response field for transmitting to the Node Bs**, as claimed.

Accordingly, claim 19 is allowable over Love in view of Toskala. The rejection of claim 19 should therefore be withdrawn. The rejection of claim 20 should also be withdrawn by virtue of its dependence from claim 19.

V. Allowed Claims

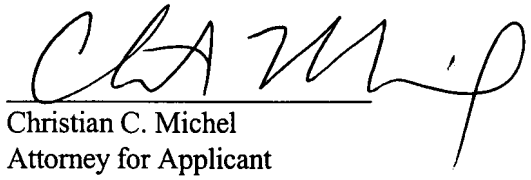
Applicants acknowledge with thanks that claims 1-14 and 17 are allowed.

VI. Conclusion

In view of the above, it is believed that the application is in condition for allowance and notice to this effect is respectfully requested. Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the telephone number indicated below.

Should any/additional fees be required, the Director is hereby authorized to charge the fees to Deposit Account No. 18-2220.

Respectfully Submitted,



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